

WHAT IS CLAIMED IS:

1. A tool for working on a workpiece, said tool comprising:

a longitudinal tool body comprising first and second elongated longitudinal members, each member being constructed of a metallic material and each having a handle portion at one end and a jaw portion at an opposite end;

intermediate portions of said first and second members being movably coupled to one another for pivotal movement about a pivot axis such that movement of said handle portions from an open position in which said handle portions are relatively far apart from one another to a closed position in which said handle portions are relatively close to one another moves said jaw portions from an open position in which said jaw portions are spaced relatively far apart from one another to a closed position in which said jaw portions are relatively close to one another and such that movement of said handle portions away from one another moves said jaw portions away from one another,

each jaw portion having a gripping surface configured such that when said jaw portions are in an open position, said gripping surfaces are relatively far apart from one another to enable a workpiece to be positioned therebetween and such that when said jaw portions are in their closed position said gripping surfaces are relatively close one another, the tool body being constructed and arranged to enable said gripping surfaces to apply generally opposing gripping forces to a workpiece by positioning the workpiece between said gripping surfaces when said jaw portions are in their open position and moving said jaw portions toward their closed position;

each jaw portion including a slot extending from one side of an associated jaw portion to an opposite side of an associated jaw portion, each slot having a pair of open opposite ends, said slots being constructed and arranged such that when said jaw portions are in their closed position, said slots are transversely aligned with one another and cooperate with one another to form a substantially continuous transverse slot that extends from one side of the tool body to an opposite side of the tool body; and

a pair of separate blade members, each blade member having a cutting edge portion providing a cutting edge that is radially aligned with said pivot axis and is constructed of a metallic material that is harder than the metallic material used to construct said elongated members, each blade member being rigidly secured within a respective one of said slots such that (a) when said jaw portions are in their closed position, said cutting edges are relatively close to one another, such that (b) when said jaw portions are in their open position said cutting edges are spaced relatively far apart from one another to enable a workpiece to be positioned therebetween, and (c) such that when a workpiece is positioned between said cutting edges and said jaw portions are moved toward their closed position, said cutting edges cut the workpiece.

2. A tool according to claim 1, wherein said cutting edges of said blade members are disposed in abutting relation to one another when said jaw portions are in their closed position.

3. A tool according to claim 1, wherein each gripping surface is located at the opposite end of the associated elongated member, the cutting edges of said blade members are adjacent said gripping surfaces and are spaced from said respective opposite ends of said elongated members.

4. A tool according to claim 1, wherein said cutting edge portion of each said blade member is selected from a group comprising a two-sided bevel profile, a one-sided compound bevel profile, a two-sided compound bevel profile, a hollow ground profile, and a parabolic profile.

5. A tool according to claim 1, wherein said cutting edge of each said blade member has a relatively sharper end and a relatively less sharp end, and wherein the sharpness of each said cutting edge transitions continuously between said cutting edge ends.

6. A tool according to claim 1, wherein the metallic material used to construct at least said cutting edge portion of each said blade member is selected from a group comprising a highly alloyed steel, a high grade tool steel, a high carbon steel, a martensitic steel, and a precipitation-hardenable steel.

7. A tool according to claim 1, wherein each said blade member is a bi-material blade member having a backing portion constructed of a metallic material and wherein said cutting edge portion is rigidly secured to said backing portion, the metallic material of said backing portion having a lesser degree of hardness than the metallic material of said cutting edge portion.

8. A tool according to claim 7, wherein said backing portion of each blade member is secured within the slot on a respective one of said elongated members.

9. A tool according to claim 7, wherein said metallic material of said cutting edge portion of each said blade member is selected from a group comprising a highly alloyed steel, a steel containing at least 0.55% carbon, a steel containing at least 1.0% carbon, an AISI tool steel, and a high speed steel.

10. A tool according to claim 7, wherein said metallic material of said cutting edge portion of each said blade member is coated with a coating material capable of increasing the hardness and/or the lubricity of each said cutting edge portion.

11. A tool according to claim 1, wherein said gripping surfaces are spaced apart from one another when said jaw portions are in their closed position.

12. A tool according to claim 1, wherein said gripping surfaces are in contact with one another when said jaw portions are in their closed position.

13. A tool according to claim 1, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a ramped surface, the knife blade being offset from the ramped surface of the anvil such that when the jaw portions are in their closed position, the cutting edge of the knife blade is relatively close to the ramped surface of the anvil and light cannot pass therethrough because the cutting edge of the knife blade is masked by the ramped surface of the anvil.

14. A tool according to claim 1, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a concave arcuate surface, the cutting edge of the knife blade being relatively close to the concave arcuate surface of the anvil when the jaw portions are in their closed position such that light cannot pass therethrough because the cutting edge of the knife blade is masked by the concave arcuate surface of the anvil.

15. A tool according to claim 1, wherein each jaw portion includes a sloped surface that extends generally upwardly and outwardly from the blade member, the sloped surface being configured to guide scrap material from a workpiece being cut away from the blade members such that the scrap material can easily fall away from the tool.

16. A cutting tool for cutting a workpiece, said cutting tool comprising:
a longitudinal tool body comprising first and second elongated longitudinal members, each member being constructed of a metallic material and each having a handle portion at one end and a jaw portion at an opposite end;

intermediate portions of said first and second members being movably coupled to one another for pivotal movement about a pivot axis such that movement of said handle portions from an open position in which said handle portions are relatively far apart from one another to a closed position in which said handle portions are relatively close to one another moves said jaw portions from an open

position in which said jaw portions are spaced relatively far apart from one another to a closed position in which said jaw portions are relatively close to one another and such that movement of said handle portions away from one another moves said jaw portions away from one another,

a pair of separate blade members each having a cutting edge, each blade member being rigidly secured to a respective one of said jaw portions such that said cutting edge thereof extends radially with respect to said pivot axis and such that when said jaw portions are in their closed position said cutting edges are relatively close to one another and when said jaw portions are in their open position said cutting edges are spaced relatively far apart from one another to enable a workpiece to be positioned therebetween so that when a workpiece is positioned between said cutting edges and said jaw portions are moved toward their closed position, said cutting edges cut the workpiece.

17. A cutting tool according to claim 16, wherein said cutting edges of said cutting blades are disposed in abutting relation to one another when said jaw portions are in their closed position.

18. A cutting tool according to claim 16, wherein said cutting edge of each said blade member is selected from a group comprising a two-sided bevel profile, a one-sided compound bevel profile, a two-sided compound bevel profile, a hollow ground profile, and a parabolic profile.

19. A cutting tool according to claim 16, wherein said cutting edge of each said blade member has a relatively sharper end and a relatively less sharp end, and wherein the sharpness of each said cutting edge transitions continuously between said cutting edge ends.

20. A cutting tool according to claim 16, wherein the metallic material used to construct said cutting edge of each said blade member is selected from a

group comprising a highly alloyed steel, a high grade tool steel, a high carbon steel, a martensitic steel, and a precipitation-hardenable steel.

21. A cutting tool according to claim 16, wherein each said blade member is a bi-material blade member having a backing portion constructed of a metallic material and a cutting edge portion constructed of a metallic material and rigidly secured to said backing portion, the metallic material of said backing portion having a lesser degree of hardness than the metallic material of said cutting edge portion.

22. A cutting tool according to claim 21, wherein each jaw portion includes a transverse slot extending from one side of an associated jaw portion to an opposite side of an associated jaw portion, each slot having a pair of open opposite ends, said slots being constructed and arranged such that when said jaw portions are in their closed position, said slots are aligned with one another and cooperate with one another to form a substantially continuous transverse slot that extends from one side of said tool body to an opposite side of said tool body and wherein the backing portion of each blade member is rigidly secured within a respective one of said slots.

23. A cutting tool according to claim 21, wherein said metallic material of said cutting edge portion of each said blade member is selected from a group comprising an AISI tool steel, a steel containing at least 0.55% carbon, a steel containing at least 1.0% carbon, and a high speed steel.

24. A cutting tool according to claim 16, wherein said metallic material of said cutting edge portion of each said blade member is coated with a coating material capable of increasing the hardness and/or the lubricity of each said cutting edge portion.

25. A cutting tool according to claim 16, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the

blade members is in the form of an anvil having a ramped surface, the knife blade being offset from the ramped surface of the anvil such that when the jaw portions are in their closed position, the cutting edge of the knife blade is relatively close to the ramped surface of the anvil and light cannot pass therethrough because the cutting edge of the knife blade is masked by the ramped surface of the anvil.

26. A cutting tool according to claim 16, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a concave arcuate surface, the cutting edge of the knife blade being relatively close to the concave arcuate surface of the anvil when the jaw portions are in their closed position such that light cannot pass therethrough because the cutting edge of the knife blade is masked by the concave arcuate surface of the anvil.

27. A cutting tool according to claim 16, wherein each jaw portion includes a sloped surface that extends generally upwardly and outwardly from the blade member, the sloped surface being configured to guide scrap material from a workpiece being cut away from the blade members such that the scrap material can easily fall away from the tool.

28. A tool for working on a workpiece, said tool comprising:
a longitudinal tool body comprising first and second elongated longitudinal members, each member being constructed of a metallic material and each having a handle portion at one end and a jaw portion at an opposite end;

intermediate portions of said first and second members being movably coupled to one another for pivotal movement about a pivot axis such that movement of said handle portions from an open position in which said handle portions are relatively far apart from one another to a closed position in which said handle portions are relatively close to one another moves said jaw portions from an open position in which said jaw portions are spaced relatively far apart from one another to a closed position in which said jaw portions are relatively close to one another and

such that movement of said handle portions away from one another moves said jaw portions away from one another,

each jaw portion having a gripping surface configured such that when said jaw portions are in an open position, said gripping surfaces are relatively far apart from one another to enable a workpiece to be positioned therebetween and such that when said jaw portions are in their closed position said gripping surfaces are relatively close one another, the tool body being constructed and arranged to enable said gripping surfaces to apply generally opposing gripping forces to a workpiece by positioning the workpiece between said gripping surfaces when said jaw portions are in their open position and moving said jaw portions toward their closed position; and

a pair of separate blade members mounted on a respective one of said jaw portions, each blade member having a cutting edge portion and a backing portion, the cutting edge portion of each blade member providing a cutting edge and is constructed of a first metallic material that is harder than the metallic material used to construct said elongated members, each blade member being rigidly secured to a respective one of said jaw portions such that (a) when said jaw portions are in their closed position, said cutting edges are relatively close to one another, such that (b) when said jaw portions are in their open position said cutting edges are spaced relatively far apart from one another to enable a workpiece to be positioned therebetween, and (c) such that when a workpiece is positioned between said cutting edges and said jaw portions are moved toward their closed position, said cutting edges cut the workpiece.

29. A tool according to claim 28, wherein said cutting edge of each said blade member is radially aligned with said pivot axis.

30. A tool according to claim 28, wherein said cutting edges of said blade members are disposed in abutting relation to one another when said jaw portions are in their closed position.

31. A tool according to claim 28, wherein said cutting edge portion of each said blade member is selected from a group comprising a two-sided bevel profile, a one-sided compound bevel profile, a two-sided compound bevel profile, a hollow ground profile, and a parabolic profile.

32. A tool according to claim 28, wherein said cutting edge of each said blade member has a relatively sharper end and a relatively less sharp end, and wherein the sharpness of each said cutting edge transitions continuously between said cutting edge ends.

33. A tool according to claim 28, wherein said metallic material used to construct each cutting edge portion is selected from a group comprising a highly alloyed steel, a high grade tool steel, a high carbon steel, a martensitic steel, and a precipitation-hardenable steel.

34. A tool according to claim 28, wherein each said blade member is a bi-material blade member having a backing portion constructed of a metallic material and wherein said cutting edge portion is rigidly secured to said backing portion, the metallic material of said backing portion having a lesser degree of hardness than the metallic material of said cutting edge portion.

35. A tool according to claim 34, wherein said backing portion of each blade member is secured within the slot on a respective one of said elongated members.

36. A tool according to claim 34, wherein said metallic material of said cutting edge portion of each said blade member is selected from a group comprising a highly alloyed steel, a high grade tool steel, a high carbon steel, a martensitic steel, and a precipitation-hardenable steel.

37. A tool according to claim 34, wherein said metallic material of said cutting edge portion of each said blade member is coated with a coating material capable of increasing the hardness and/or the lubricity of each said cutting edge portion.

38. A tool according to claim 28, wherein said gripping surfaces are spaced apart from one another when said jaw portions are in their closed position.

39. A tool according to claim 28, wherein said gripping surfaces are in contact with one another when said jaw portions are in their closed position.

40. A tool according to claim 28, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a ramped surface, the knife blade being offset from the ramped surface of the anvil such that when the jaw portions are in their closed position, the cutting edge of the knife blade is relatively close to the ramped surface of the anvil and light cannot pass therethrough because the cutting edge of the knife blade is masked by the ramped surface of the anvil.

41. A tool according to claim 28, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a concave arcuate surface, the cutting edge of the knife blade being relatively close to the concave arcuate surface of the anvil when the jaw portions are in their closed position such that light cannot pass therethrough because the cutting edge of the knife blade is masked by the concave arcuate surface of the anvil.

42. A tool according to claim 28, wherein each jaw portion includes a sloped surface that extends generally upwardly and outwardly from the blade member, the sloped surface being configured to guide scrap material from a

workpiece being cut away from the blade members such that the scrap material can easily fall away from the tool.

43. A method of making a tool, said method comprising:

providing a pair of blade members and a tool body, each blade member being constructed of one or more metallic materials and having a backing portion and a cutting edge portion providing a cutting edge, the tool body comprising a pair of first and second elongated members, each member being an integral structure constructed of a metallic material and having a handle portion at one end and a jaw portion at an opposite end, each jaw portion having one or more welding projections, intermediate portions of the elongated members being coupled to one another for movement about a pivot axis such that movement of the handle portions from an open position to a closed position moves the jaw portions from an open position in which the jaw portions are relatively far apart from one another to a closed position in which the jaw portions are relatively close to one another and movement of the handle portions toward their open position moves the jaw portions away from one another; and

welding a blade member to the jaw portion of each elongated member by (a) placing each blade member in contact with each projection on a respective jaw portion and (b) applying electrical current and force to the tool body and the blade members, the applied electrical current flowing through each projection and the associated blade member and establishing a sufficient current density in each projection to heat each projection sufficiently to cause the metallic material of each projection to soften and the force moving each blade member and softened metallic material from each projection toward the associated jaw portion thereby forming a welded connection between each blade member and a respective jaw portion of the tool body, each blade member being secured to the tool body such that when the jaw portions are in their open position, the cutting edges of the blade members are spaced apart from one another and such that when the jaw portions are in their closed position, the cutting edges of the blade members are relatively close to one another.

44. A method according to claim 43, wherein each jaw portion of the tool body includes a slot sized to receive a respective blade member, each projection on each jaw portion being disposed within the slot formed therein, said welding further comprising (a) placing each blade member such that each blade member is in contact with each projection on a respective jaw portion as aforesaid and is aligned with a respective slot, and (b) moving each blade member and softened metallic material of each projection into the associated slot so that each blade member is disposed within a respective slot when a welded connection is formed between each blade member and the respective jaw portion.

45. A method according to claim 43, said jaw portion of each elongated member of said tool body having a gripping surface constructed and arranged such that when the jaw portions are in an open position the gripping surfaces are relatively far apart from one another and when the jaw portions are in their closed position the gripping surfaces are relatively close to one another to enable the gripping surfaces to apply generally opposing gripping forces to a workpiece by positioning the workpiece between the gripping surfaces when the jaw portions are in their open position and moving the jaw portions toward their closed position.

46. A method according to claim 43, said placing each blade member in contact with each projection on a respective jaw portion further comprising placing the blade members on the jaw portions so that the cutting edges of the blade members extend radially with respect to the pivot axis so that the cutting edges extend radially with respect to the pivot axis after formation of the welded connections between the blade members and the respective jaw portions.

47. A method according to claim 43, said placing each blade member in contact with each projection on a respective jaw portion further comprising placing the blade members on said projections when said jaw portions are in their closed position.

48. A method according to claim 47, said placing each blade member further comprising placing the blade members on the projections so that the cutting edges of the blade members are in abutting relation with one another so that said cutting edges are in abutting relation to one another when the jaw portions are in their closed position after weld formation.

49. A method according to claim 48, said applying force to the tool body and the blade members further comprising applying force to both blade members simultaneously so that the blade members move toward the jaw portions simultaneously.

50. A method according to claim 49, wherein the electrical current is applied by first and second electrodes, the first electrode being in contact with each blade member and the second electrode being in contact with the tool body, the first electrode being operable to apply force to the blade members and to move each blade member toward an associated jaw portion as aforesaid such that the cutting edges remain in abutting engagement as the welded connections are being formed.

51. A method according to claim 43, wherein after said welded connections are formed, a second electrical current is applied to each welded connection to temper each welded connection.

52. A method according to claim 51, wherein each welded connection is quenched for a period of time, and wherein after said quenching, a third electrical current is applied to each welded connection to temper each welded connection.

53. A method according to claim 43, wherein the cutting edge of each blade member has hardness of approximate 60 HRC and wherein each welded connection is tempered to approximately 45 HRC.

54. A method according to claim 43, wherein the cutting edges of the blade members are disposed in abutting relation to one another when the jaw portions are in their closed position.

55. A method according to claim 43, said rigidly securing a blade member in each slot further comprising, prior to said applying electrical current and force, placing a layer of metallic material between each associated blade member and the projections on the associated jaw portion, the metallic material of each layer of material having a lower melting point and a higher resistance to electrical current than the metallic material of the elongated member and the metallic material of the blade members and the metallic material of the each layer being metallurgically compatible with the metallic material of the elongated members and the metallic material of the blades, said applying electrical current and force further comprising applying electrical current such that the electrical current flows through each projection, through each layer of metallic material and through the associated blade member, the electrical current having a density sufficient to cause the metallic material of each projection and the metallic material of each layer of metallic material to soften and the force moving each blade member and softened metallic material from each projection and each layer toward the associated jaw portion thereby forming a welded connection between each blade member and a respective jaw portion of the tool body.

56. A method according to claim 55, wherein each jaw portion of the tool body includes a slot, each projection on each jaw portion being disposed within the slot formed therein, said welding further comprising (a) placing each blade member and each layer in a respective slot such that a layer of material is positioned between each blade member each projection within the associated slot on a respective jaw portion, and (b) moving each blade member and softened metallic material of each projection and each layer into the associated slot so that each blade member is disposed within a respective slot when a welded connection is formed between each blade member and the respective jaw portion.

57. A method according to claim 55, wherein each layer comprises a metallic material selected from a group consisting of stainless steel, Inconel and copper, and wherein each layer of metallic material has a thickness of between approximately 0.001 inch and 0.020 inch.

58. A method according to claim 43, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a ramped surface, the knife blade being offset from the ramped surface of the anvil such that when the jaw portions are in their closed position, the cutting edge of the knife blade is relatively close to the ramped surface of the anvil and light cannot pass therethrough because the cutting edge of the knife blade is masked by the ramped surface of the anvil.

59. A method according to claim 43, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a concave arcuate surface, the cutting edge of the knife blade being relatively close to the concave arcuate surface of the anvil when the jaw portions are in their closed position such that light cannot pass therethrough because the cutting edge of the knife blade is masked by the concave arcuate surface of the anvil.

60. A method according to claim 43, wherein each jaw portion includes a sloped surface that extends generally upwardly and outwardly from the blade member, the sloped surface being configured to guide scrap material from a workpiece being cut away from the blade members such that the scrap material can easily fall away from the tool.

61. A method of making a tool, said method comprising,
forming first and second elongated longitudinal members, each member being an integral structure constructed of a metallic material and having a handle

portion at one end and a jaw portion at an opposite end, each jaw portion having a gripping surface;

forming a longitudinal tool body by connecting intermediate portions of the elongated members to one another for pivotal movement about a pivot axis such that movement of the handle portions from an open position to a closed position moves the jaw portions from an open position in which the gripping surfaces are relatively far apart from one another to a closed position in which the gripping surfaces are relatively close to one another and movement of the handle portions toward their open position moves the jaw portions away from one another, the connected elongated members being constructed and arranged to enable the gripping surfaces to apply generally opposing gripping forces to a workpiece by positioning the workpiece between the gripping surfaces when the jaw portions are in their open position and moving the jaw portions toward their closed position;

forming a substantially continuous transverse slot that extends from one side of the tool body to an opposite side of the tool body when the jaw portions are in their closed position, the substantially continuous slot comprising a transverse slot formed in each jaw portion, the slot in each jaw portion extending from one side of an associated jaw portion to an opposite side of an associated jaw portion and the slots in the jaw portions being transversely aligned with one another to form the substantially continuous slot in the tool body, the slot in each jaw portion including one or more integral projections;

providing a pair of blade members, each blade member having a cutting edge portion providing a cutting edge, each blade member being constructed of one or more metallic materials;

welding a blade member to the jaw portion of each elongated member by (a) placing each blade member in contact with each projection on a respective jaw portion and (b) applying electrical current and force to the tool body and the blade members, the applied electrical current flowing through each projection and the associated blade member and establishing a sufficient current density in each projection to heat each projection sufficiently to cause the metallic material of each projection to soften and the force moving each blade member and softened metallic

material from each projection toward the associated jaw portion and into a respective slot thereby forming a welded connection between each blade member and a respective jaw portion of the tool body, each blade member being welded to a respective jaw portion such that when the jaw portions are in their open position, the cutting edges of the blade members are spaced apart from one another and such that when the jaw portions are in their closed position, the cutting edges of the blade members are relatively close to one another.

62. A method according to claim 61, said placing each blade member in contact with each projection on a respective jaw portion further comprising placing the blade members on the jaw portions so that the cutting edges of the blade members extend radially with respect to the pivot axis so that the cutting edges extend radially with respect to the pivot axis after formation of the welded connections between the blade members and the respective jaw portions.

63. A method according to claim 61, said placing each blade member in contact with each projection on a respective jaw portion further comprising placing the blade members on said projections when said jaw portions are in their closed position.

64. A method according to claim 63, said placing each blade member further comprising placing the blade members on the projections so that the cutting edges of the blade members are in abutting relation to one another and said applying force to the tool body and the blade members further comprising moving the blade members toward the associated jaw portion simultaneously so that after weld formation, the cutting edges of the blade members are in abutting relation to one another when the jaw portions are in their closed position.

65. A method according to claim 64, wherein the electrical current is applied by first and second electrodes, the first electrode being in contact with each blade member and the second electrode being in contact with the tool body, the first

electrode being operable to apply force to the blade members and to move the blade members simultaneously toward the respective jaw portions as aforesaid so that the cutting edges remain in abutting engagement with one another as the blade members move toward the tool body and as the welded connections are being formed.

66. A method according to claim 61, wherein after the welded connections are formed, a second electrical current is applied to each welded connection to temper each welded connection.

67. A method according to claim 66, wherein each welded connection is quenched for a period of time, and wherein after said quenching, a third electrical current is applied to each welded connection to temper each welded connection.

68. A method according to claim 67, wherein the projections are of approximately equal size to one another and wherein each said projection has a triangular cross-section.

69. A method according to claim 68, wherein the force applied to each blade member is between approximately 3500 pounds and approximately 5000 pounds per linear inch of height of each triangular projection.

70. A method according to claim 61, said rigidly securing a blade member in each slot further comprising, prior to said applying electrical current and force, placing a sheet of metallic material between each associated blade member and the projections on the associated jaw portion, the metallic material of each sheet of material having a lower melting point and a higher resistance to electrical current than the metallic material of the elongated member and the metallic material of the blade members and the metallic material of the each sheet being metallurgically compatible with the metallic material of the elongated members and the metallic material of the blades, said applying electrical current and force further comprising applying electrical current such that the electrical current flows through each

projection, through each sheet of metallic material and through the associated blade member, the electrical current having a density sufficient to cause the metallic material of each projection and the metallic material of each sheet of metallic material to soften and the force moving each blade member and softened metallic material from each projection and each sheet toward the associated jaw portion thereby forming a welded connection between each blade member and a respective jaw portion of the tool body.

71. A method according to claim 70, wherein each sheet is comprised of a metallic material selected from a group consisting of stainless steel, Inconel and copper.

72. A method according to claim 61, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a ramped surface, the knife blade being offset from the ramped surface of the anvil such that when the jaw portions are in their closed position, the cutting edge of the knife blade is relatively close to the ramped surface of the anvil and light cannot pass therethrough because the cutting edge of the knife blade is masked by the ramped surface of the anvil.

73. A method according to claim 61, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a concave arcuate surface, the cutting edge of the knife blade being relatively close to the concave arcuate surface of the anvil when the jaw portions are in their closed position such that light cannot pass therethrough because the cutting edge of the knife blade is masked by the concave arcuate surface of the anvil.

74. A method according to claim 61, wherein each jaw portion includes a sloped surface that extends generally upwardly and outwardly from the blade member, the sloped surface being configured to guide scrap material from a

workpiece being cut away from the blade members such that the scrap material can easily fall away from the tool.

75. A method of making a tool, said method comprising:

providing a pair of blade members and a tool body, each blade member being constructed of one or more metallic materials and having a cutting edge, the tool body comprising a pair of first and second elongated members, each member being an integral structure constructed of a metallic material and having a handle portion at one end and a jaw portion at an opposite end, each jaw portion having a gripping surface and one or more welding projections, intermediate portions of the elongated members being coupled to one another for movement about a pivot axis such that movement of the handle portions from an open position to a closed position moves the jaw portions from an open position in which the gripping surfaces are relatively far apart from one another to a closed position in which the gripping surfaces are relatively close to one another and movement of the handle portions toward their open position moves the gripping surfaces away from one another to enable the gripping surfaces to apply generally opposing gripping forces to a workpiece by positioning the workpiece between the gripping surfaces when the jaw portions are in their open position and moving the jaw portions toward their closed position;

welding a blade member to the jaw portion of each elongated member by

(a) placing the jaw portions of the tool body in their closed position,

(b) positioning the blade members such that each blade member is in contact with each projection on a respective jaw portion and

(c) applying electrical current and force to the tool body and the blade members, the electrical current being applied utilizing a first electrode in contact with the blade members and a second electrode in contact with the tool body, the applied electrical current flowing through each projection and the associated blade member and establishing a sufficient current density in each projection to cause the metallic material of each projection to soften and the force being applied utilizing the first electrode, the first electrode being configured and operable to move each blade member and metallic material from each projection toward the associated jaw

portion thereby forming a welded connection between each blade member and a respective jaw portion of the tool body and to align the cutting edges of the blade members with one another as each welded connection is formed so that when the jaw portions are in their closed position, the cutting edges of the blade members are aligned with one another.

76. A method according to claim 75, said positioning further comprising positioning the blade members such that the cutting edges of the blade members are in abutting relation to one another and wherein the first electrode is further configured and operable to maintain the cutting edges of the blade members in abutting relation with one another as each welded connection is formed so that when the jaw portions are in their closed position after weld formation, the cutting edges of the blade members are in abutting relation with one another.

77. A method according to claim 75, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a ramped surface, the knife blade being offset from the ramped surface of the anvil such that when the jaw portions are in their closed position, the cutting edge of the knife blade is relatively close to the ramped surface of the anvil and light cannot pass therethrough because the cutting edge of the knife blade is masked by the ramped surface of the anvil.

78. A method according to claim 75, wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a concave arcuate surface, the cutting edge of the knife blade being relatively close to the concave arcuate surface of the anvil when the jaw portions are in their closed position such that light cannot pass therethrough because the cutting edge of the knife blade is masked by the concave arcuate surface of the anvil.

79. A method according to claim 75, wherein each jaw portion includes a sloped surface that extends generally upwardly and outwardly from the blade member, the sloped surface being configured to guide scrap material from a workpiece being cut away from the blade members such that the scrap material can easily fall away from the tool.

80. A method of welding a workpiece engaging structure to a tool body, the workpiece engaging structure being constructed of at least one metallic material and having a workpiece engaging portion constructed of a relatively harder material, and the tool body being constructed of a relatively softer metallic material, the method comprising;

providing the workpiece engaging structure constructed of at least one metallic materials and having the workpiece engaging portion, the workpiece engaging structure including a backing portion and the workpiece engaging portion being secured to the backing portion;

providing the tool body constructed of the relatively softer metallic material and having one or more projections projecting integrally outwardly from a surface thereof;

placing the backing portion of the workpiece engaging structure in contact with each projection on the tool body;

applying electrical current and force to the tool body and the workpiece engaging structure, the applied electrical current flowing between the tool body and the workpiece engaging structure through each projection and establishing a sufficient current density in each projection to heat each projection sufficiently to cause the metallic material of each projection to soften and the force moving the workpiece engaging structure and softened metallic material of each projection toward the tool body thereby forming a welded connection between the workpiece engaging structure and the tool body, each projection and the workpiece engaging structure being constructed and arranged such that the applied electrical current heats the projections sufficiently to soften the metallic material of each projection to enable the welded connection to be formed without heating the workpiece engaging

portion of the workpiece engaging structure to a degree that would substantially affect the hardness of the workpiece engaging portion of the workpiece engaging structure.

81. A method according to claim 80, wherein the metallic material of the backing portion of the workpiece engaging structure has a lesser degree of hardness than the metallic material of the workpiece engaging portion of the workpiece engaging structure.

82. A method according to claim 81, wherein the workpiece engaging structure is a blade member and the workpiece engaging portion thereof provides a cutting edge portion of the blade member.

83. A method according to claim 82, wherein the metallic material used to construct said cutting edge portion of each the blade member is a highly alloyed steel.

84. A method according to claim 82, wherein the metallic material of the cutting edge portion of each blade member is coated with a coating material capable of increasing the hardness and/or the lubricity of each said cutting edge portion.

85. A tool for working on a workpiece, said tool comprising:
a longitudinal tool body comprising first and second elongated longitudinal members, each member being constructed of a metallic material and each having a handle portion at one end and a jaw portion at an opposite end;
intermediate portions of said first and second members being movably coupled to one another for pivotal movement about a pivot axis such that movement of said handle portions from an open position in which said handle portions are relatively far apart from one another to a closed position in which said handle portions are relatively close to one another moves said jaw portions from an open position in which said jaw portions are spaced relatively far apart from one another

to a closed position in which said jaw portions are relatively close to one another and such that movement of said handle portions away from one another moves said jaw portions away from one another,

each jaw portion having a gripping surface configured such that when said jaw portions are in an open position, said gripping surfaces are relatively far apart from one another to enable a workpiece to be positioned therebetween and such that when said jaw portions are in their closed position said gripping surfaces are relatively close one another, the tool body being constructed and arranged to enable said gripping surfaces to apply generally opposing gripping forces to a workpiece by positioning the workpiece between said gripping surfaces when said jaw portions are in their open position and moving said jaw portions toward their closed position;

each jaw portion including a slot extending from one side of an associated jaw portion to an opposite side of an associated jaw portion, each slot having a pair of open opposite ends, said slots being constructed and arranged such that when said jaw portions are in their closed position, said slots are transversely aligned with one another and cooperate with one another to form a substantially continuous transverse slot that extends from one side of the tool body to an opposite side of the tool body; and

a pair of separate blade members, each blade member having a cutting edge portion providing a cutting edge that is radially aligned with said pivot axis and is constructed of a metallic material that is harder than the metallic material used to construct said elongated members, each blade member being rigidly secured within a respective one of said slots such that (a) when said jaw portions are in their closed position, said cutting edges are relatively close to one another, such that (b) when said jaw portions are in their open position said cutting edges are spaced relatively far apart from one another to enable a workpiece to be positioned therebetween, and (c) such that when a workpiece is positioned between said cutting edges and said jaw portions are moved toward their closed position, said cutting edges cut the workpiece,

wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil

having a ramped surface, the knife blade being offset from the ramped surface of the anvil such that when the jaw portions are in their closed position, the cutting edge of the knife blade is relatively close to the ramped surface of the anvil and light cannot pass therethrough because the cutting edge of the knife blade is masked by the ramped surface of the anvil.

86. A tool for working on a workpiece, said tool comprising:

a longitudinal tool body comprising first and second elongated longitudinal members, each member being constructed of a metallic material and each having a handle portion at one end and a jaw portion at an opposite end;

intermediate portions of said first and second members being movably coupled to one another for pivotal movement about a pivot axis such that movement of said handle portions from an open position in which said handle portions are relatively far apart from one another to a closed position in which said handle portions are relatively close to one another moves said jaw portions from an open position in which said jaw portions are spaced relatively far apart from one another to a closed position in which said jaw portions are relatively close to one another and such that movement of said handle portions away from one another moves said jaw portions away from one another,

each jaw portion having a gripping surface configured such that when said jaw portions are in an open position, said gripping surfaces are relatively far apart from one another to enable a workpiece to be positioned therebetween and such that when said jaw portions are in their closed position said gripping surfaces are relatively close one another, the tool body being constructed and arranged to enable said gripping surfaces to apply generally opposing gripping forces to a workpiece by positioning the workpiece between said gripping surfaces when said jaw portions are in their open position and moving said jaw portions toward their closed position;

each jaw portion including a slot extending from one side of an associated jaw portion to an opposite side of an associated jaw portion, each slot having a pair of open opposite ends, said slots being constructed and arranged such that when said jaw portions are in their closed position, said slots are transversely aligned with one

another and cooperate with one another to form a substantially continuous transverse slot that extends from one side of the tool body to an opposite side of the tool body; and

a pair of separate blade members, each blade member having a cutting edge portion providing a cutting edge that is radially aligned with said pivot axis and is constructed of a metallic material that is harder than the metallic material used to construct said elongated members, each blade member being rigidly secured within a respective one of said slots such that (a) when said jaw portions are in their closed position, said cutting edges are relatively close to one another, such that (b) when said jaw portions are in their open position said cutting edges are spaced relatively far apart from one another to enable a workpiece to be positioned therebetween, and (c) such that when a workpiece is positioned between said cutting edges and said jaw portions are moved toward their closed position, said cutting edges cut the workpiece,

wherein one of the blade members is in the form of a knife blade having a cutting edge and the other of the blade members is in the form of an anvil having a concave arcuate surface, the cutting edge of the knife blade being relatively close to the concave arcuate surface of the anvil when the jaw portions are in their closed position such that light cannot pass therethrough because the cutting edge of the knife blade is masked by the concave arcuate surface of the anvil.

87. A tool for working on a workpiece, said tool comprising:

a longitudinal tool body comprising first and second elongated longitudinal members, each member being constructed of a metallic material and each having a handle portion at one end and a jaw portion at an opposite end;

intermediate portions of said first and second members being movably coupled to one another for pivotal movement about a pivot axis such that movement of said handle portions from an open position in which said handle portions are relatively far apart from one another to a closed position in which said handle portions are relatively close to one another moves said jaw portions from an open position in which said jaw portions are spaced relatively far apart from one another

to a closed position in which said jaw portions are relatively close to one another and such that movement of said handle portions away from one another moves said jaw portions away from one another,

each jaw portion having a gripping surface configured such that when said jaw portions are in an open position, said gripping surfaces are relatively far apart from one another to enable a workpiece to be positioned therebetween and such that when said jaw portions are in their closed position said gripping surfaces are relatively close one another, the tool body being constructed and arranged to enable said gripping surfaces to apply generally opposing gripping forces to a workpiece by positioning the workpiece between said gripping surfaces when said jaw portions are in their open position and moving said jaw portions toward their closed position;

each jaw portion including a slot extending from one side of an associated jaw portion to an opposite side of an associated jaw portion, each slot having a pair of open opposite ends, said slots being constructed and arranged such that when said jaw portions are in their closed position, said slots are transversely aligned with one another and cooperate with one another to form a substantially continuous transverse slot that extends from one side of the tool body to an opposite side of the tool body; and

a pair of separate blade members, each blade member having a cutting edge portion providing a cutting edge that is radially aligned with said pivot axis and is constructed of a metallic material that is harder than the metallic material used to construct said elongated members, each blade member being rigidly secured within a respective one of said slots such that (a) when said jaw portions are in their closed position, said cutting edges are relatively close to one another, such that (b) when said jaw portions are in their open position said cutting edges are spaced relatively far apart from one another to enable a workpiece to be positioned therebetween, and (c) such that when a workpiece is positioned between said cutting edges and said jaw portions are moved toward their closed position, said cutting edges cut the workpiece,

wherein each jaw portion includes a sloped surface that extends generally upwardly and outwardly from the blade member, the sloped surface being

configured to guide scrap material from a workpiece being cut away from the blade members such that the scrap material can easily fall away from the tool.